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UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. : 10/065,436 Confirmation No: 8668
Applicant : Frederick L. Travelute III
Filed : 10/17/2002
T.C./A.U. : 1771
Examiner : Jennifer A. Boyd
Docket No. : 3000.166
Customer No. : 021176
For : HIGHLY ABSORBENT POLYESTER FIBERS

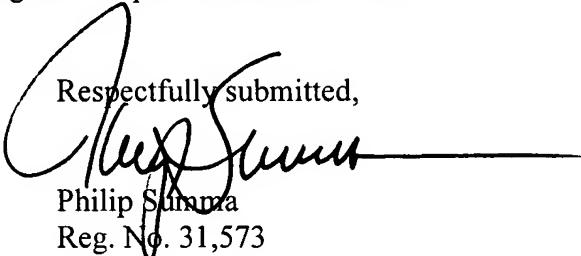
August 31, 2005

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**TRANSMITTAL OF APPEAL BRIEF
(PATENT APPLICATION – 37 C.F.R. § 1.192)**

Transmitted herewith is the revised APPEAL BRIEF in this application with respect to the Notification of Non-Compliant Appeal Brief mailed on August 1, 2005. Any additional fee or refund may be charged to Deposit Account 50-0332.

Respectfully submitted,



Philip Summa
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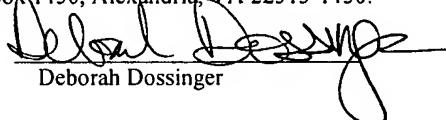
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Deborah Dossinger



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APPEAL BRIEF

On March 31, 2005, Applicant filed a Notice of Appeal from the Primary Examiner to the Board Of Patent Appeals and Interferences in accordance with 37 C.F.R. § 1.191. The Notice of Appeal was filed in response to the Final Office Action mailed December 1, 2004. In accordance with 37 C.F.R. § 41.37(a)(1), Applicant timely submits this Appeal Brief.

Real Party in Interest

The real party in interest is Wellman, Inc., a corporation organized under the laws of Delaware and located in Shrewsbury, County of Monmouth, State of New Jersey (“Wellman”). Wellman is the real party in interest by virtue of an assignment from the inventor to Wellman submitted with the application and now recorded at Reel 013617, Frame 0427.

Related Appeals and Interferences

There are currently no related appeals or interferences.

Status of Claims

Claims 2, 4-38, and 72-80 are pending and stand rejected. Claims 2, 4-38, and 72-80 are the subject of this appeal. Claims 39-71 and 81-86 have been withdrawn. Claims 1 and 3 have been cancelled. The claims are attached hereto as Exhibit 1.

Status of Amendments

No amendments were entered subsequent to the Examiner's final rejection dated December 1, 2004.

Summary of Claimed Subject Matter

The claimed invention is related to materials useful for absorbing large amounts (relative to their own weight) of liquids and is particularly related to highly absorbent fibers that can be incorporated into absorbent structures for which fibers are desired or necessary, particularly structures that include nonwoven fabrics.

Such absorbing structures generally incorporate physically-absorbing elements or chemically absorbing elements, and often both. Currently, chemically-absorbing elements are frequently of the modified polyacrylate family and include sodium polyacrylate and related compounds. Such modified polyacrylate compositions can indeed absorb large amounts of liquids, typically hundreds of grams of water per gram of material. They cannot, however, be formed into fibers, and instead must be coated thereon whenever an absorbent fabric structure (typically, but not necessarily, nonwoven) is desired or required.

Although fibrous structures are available with highly absorbent characteristics, they tend to be combinations in which a highly absorbent material (*e.g.*, the polyacrylates) is physically or chemically attached to fibers or to a fabric. As a result, they tend to be somewhat sophisticated in nature, and are thus relatively expensive.

Conventional fibers offer the advantages of fabric manufacture, but cannot generally approach the absorbency of the modified polyacrylates. For example, cotton can typically absorb water in an amount of about 10-15% by volume, wool can absorb about 10-20%, and rayon about 15-20%.

Even these absorbencies can be disadvantageous, however, because many fibers tend to lose strength or other desired fiber (or fabric) characteristics when wet. Nylon, for example, tends to stretch when wet. In contrast, polyester remains generally unaffected by moisture, but has very little inherent absorbency. Although polyester is widely used in athletic clothing because of its high strength, its wicking (as opposed to absorbing) properties, and its "wash and wear" characteristics, its low absorbency has prevented its widespread use for absorbent purposes. Nevertheless, polyester is generally inexpensive, and widely available. Its properties are well-understood as are the techniques required to manufacture polyester filament, staple fiber from filament, and yarns and fabrics from the staple. To date, however, attempts at incorporating polyester into absorbent structures have tended to be chemically or physically complex; *e.g.*, U.S. Patent No. 4,361,617.

Accordingly, incorporating polyester into absorbent structures as a replacement for or complement to existing structures is an attractive possibility.

In this regard, the invention is a hollow polymeric filament having sufficient openings therein for said hollow filament to substantially fill with water. In one aspect, the invention is a polyester filament having a moisture absorption capability of between about 10 and 30 percent by volume. In another aspect, the invention is a hollow polyester filament having an asymmetric cross section and having sufficient openings therein for the hollow filament to substantially fill with water.

The claimed material eliminates or reduces many of the problems identified above with respect to synthetic, natural, and combined materials. Further, material according to the present invention is inexpensive and widely available.

Grounds of Rejection to be Reviewed on Appeal

Claims 2, 4, 5, and 11-15 are rejected under 35 U.S.C. §102(b) as being unpatentable over U.S. Patent No. 4,336,307 to Shiozaki *et al.*

Claims 2, 4-10, and 72-80 are rejected under 35 U.S.C. §102(b)/103(a) as being unpatentable over JP 57139600A to Hirakawa *et al.*

Claims 16-38 are rejected under 35 U.S.C. §103(a) as being unpatentable over JP H3-287848 (Tamiya *et al.*) in view of U.S. Patent No. 6,368,990 to Jennergren *et al.*

Argument

The Office rejects pending Claims 2, 4, 5, and 11-15 under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 4,336,307 to Shiozaki *et al.* The Examiner speculates that because the Shiozaki '307 patent discloses a number of fine pores through which the hollow is connected with the outside of the filament, the pores are "sufficient openings" to fill with liquid. *See* June 28, 2004 Office Action, paragraph 7.

The Office rejects pending Claims 2, 4-10, and 72-80 under 35 U.S.C. § 102(b)/103(a) as anticipated by, or in the alternative, obvious over JP 57139600A (Hirakawa *et al.*). The Examiner maintains that the Hirakawa '600A reference inherently discloses the claimed invention by disclosing the use of "...like materials (i.e. a polyester staple filament having a length between 1-15 mm and a denier of up to 3)." *See* June 28, 2004 Office Action, paragraph 9.

The Office rejects pending Claims 16-38 under 35 U.S.C. § 103(a) as obvious over JP H3-287848 (Tamiya *et al.*) in view of U.S. Patent No. 6,368,990 to Jennergren *et al.* The

Examiner maintains that the combination renders obvious the claimed invention despite the lack of any functional absorption capacity disclosure, as claimed. In addition, both references teach a thermal bonding step melting two kinds of polymer together to form a conjugate. *See* June 28, 2004 Office Action, paragraph 11. This teaching — if applied to the claimed invention — will destroy the claimed absorptive function.

The Office has Failed to Provide an Anticipatory Reference

The Examiner rejected Claims 2, 4, 5 and 11-15 under 35 U.S.C. §102(b) as anticipated by U.S. Pat. No. 4,336,307 to Shiozaki *et al.* The Examiner contends that there is no evidence to support the Applicants' argument that the pore forming agent required by Shiozaki materially affects the basic and novel characteristics of the filament. Further, the Examiner states that, "If the basic and novel characteristics of the Applicant's invention is the ability to fill with a liquid, nothing added by Shiozaki impairs that characteristic."

Applicants respectfully contend that the, "basic and novel characteristic" of the invention is not simply, "...the ability to fill with a liquid. ..." The basic and novel characteristics of the invention are defined by the four corners of the claim. *See* MPEP 2163 (II)(A)(1). Thus, the Examiner's initial reasoning is flawed.

Furthermore, the Examiner is attempting to take the position that polyethylene terephthalate is identical to polyester blended with the R'SO₃M' sulfonate (R' = 3-30 carbon alkali radicals; M' = alkali or alkali earth metal). The Examiner maintains this position even though the sulfonate is included for the specific purpose of being treated — along with the polyester — with an alkali solution. According to Shiozaki this, "partially dissolves" the polyester and modifies its hand and appearance (See Column 9, lines 55-64).

In short, an alkali-treated blend of polyester and sulfonate cannot, "consist essentially of," polyethylene terephthalate. Accordingly, Shiozaki must be removed as a §102 reference.

The Office has Failed to Establish a §102/103 Rejection

The Examiner has also raised publication JPS57-139600A (Hirakawa, *et. al.*) as a “35 U.S.C. §102/103” reference against Claims 2, 4-10, and 72-80. First, with respect to §102, the ‘600A publication merely mentions that its paper-like sheet material can contain, “empty-core fibers.” The mere recitation of an, “empty core,” fails to meet the recitations of Claims 2 and 72. As noted in Applicants’ specification, mere hollow filaments will not, “substantially fill” or, “fill entirely” with water or related liquids because the presence of air trapped in the hollow core will quickly balance (and stop) the capillary effect before the filament will fill. *See* paragraph 0039.

Accordingly, the “empty core fiber” structure disclosed by the ‘600A publication fails to anticipate Claims 2 and 72. Therefore, the ‘600A publication must be removed as a 35 U.S.C. §102 reference as against the pending claims.

With respect to the 35 U.S.C. §103(a) rejection, the Examiner further rejected Claims 2, 4-10, and 72-80 under as obvious over the ‘600A reference.

The ‘600A publication discloses, “...a non-woven fiber sheet having flexible and excellent texture and appearance and is used for products, such as hygiene products.” *See* page 655, column 2, section 3, first paragraph. Furthermore, the ‘600A publication discloses that, “The inventors of the present invention ... succeeded in manufacturing extremely flexible and soft-to-the-touch non-woven fiber sheets. ...” *See* page 656, column 1, second paragraph. Yet further disclosure states that,

“The nonwoven fiber sheet made by the method of the present invention has excellent flexibility and bulkiness in addition to its favorable texture. For this reason, the fiber sheet can be used as a top sheet for diapers and sanitary pads, other hygiene products. ...”

See page 657, column 1, paragraph 3.

Conspicuously absent from the list of features in the ‘600A publication is the ability of the fiber to, “substantially fill” or to, “fill entirely” with a liquid as claimed in Claims 2 and 72 of the invention, respectively. In fact, the ‘600A publication teaches away from the invention by grouping that fiber with, “hydrophobic polyester fibers . . . used as the top sheet for hygiene products, such as diapers and sanitary pads, in particular.” By definition, “hydrophobic” means, “Repelling, tending not to combine with, or incapable of dissolving in water.” *See, “The American Heritage Dictionary of the English Language, Fourth Edition.”*

Interpreted by one of ordinary skill in the art, the disclosure of the ‘600A publication is a hydrophobic fiber sheet suitable for use as a top sheet in hygiene and other products. This hydrophobic fiber sheet possesses a pleasing hand and is permeable (not absorbent) to moisture. *See page 656, column 1, paragraph 1.* The hydrophobic sheet is permeable to allow moisture through the hydrophobic sheet to an absorbent layer, as is typical of sanitary product construction. It is not designed to fill with moisture in any capacity. Accordingly, no moisture absorption characteristics regarding the hydrophobic fiber disclosed in the ‘600A publication is given.

As for the ‘600A publication disclosing empty-core fibers; this disclosure is specifically in the context of improving the flexibility and bulkiness properties of the hydrophobic fiber sheet. Accordingly, the ‘600A publication includes several embodiments of non-circular cross section fibers to this end. *See the paragraph bridging pages 656 and 657.* This disclosure is not relevant in the context of the claimed invention.

In summary, the ‘600A publication fails to suggest a filament or a staple filament capable of substantially filling or filling entirely with liquid. Furthermore, the ‘600A publication discloses a fiber sheet in the context of a hydrophobic polyester fiber, meaning that the sheet repels or tends not to combine with water. Thus, Claims 2, 4-10, and 72-80 are not rendered obvious by the ‘600A publication. Therefore, the ‘600A publication fails as a 35 U.S.C. § 103(a) reference as well.

The Office has Failed to Establish a Prima Facie Case of Obviousness

The Examiner rejected Claims 16-38 under 35 U.S.C. §103(a) as being unpatentable over JP H3-287848 to Tamiya *et al.* in view of U.S. Pat. No. 6,368,990 to Jennergren *et al.*

Applicant respectfully submits that the combination cited by the Office fails to satisfy the requirements for a *prima facie* case of obviousness under *Graham v. John Deere*, 383 U.S. 1, 148 USPQ 459 (1966) and its progeny. Obviousness cannot be established by combining pieces of prior art absent some teaching, suggestion, or incentive supporting the combination. *In re Geiger*, 815 F.2d 686, 688, 1 USPQ2d 1276, 1278 (Fed. Cir. 1987) (reversing the finding of obviousness because the standard for obviousness was not met where the application was based on a specific combination of existing techniques where many possible combinations existed).

The independent claims in this group (Claims 16, 28, 29, 30, and 37) all recite specific absorption capacities in clear functional terms. Neither the Tamiya ‘848 reference nor the Jennergren ‘990 patent, taken alone or together, disclose or suggest these functional capacities.

The Tamiya ‘848 reference discloses a fiber conjugate comprising two kinds of polymer having a specific melting point therebetween. Similarly, the Jennergren ‘990 patent discloses nonwoven fabrics formed of hollow filaments and/or staple fibers formed of a polypropylene composition. The Jennergren reference further discloses that the hollow filaments of the ‘990 patent are, “...believed to form stronger thermal bonds (in the fabric and in laminate structures)....” Regarding thermal bonds, the Jennergren ‘990 patent also states that, “The thermal bonds can also have a greater bond area. ... This can also improve fabric strength and abrasion resistance.” See column 3, lines 33 to 39.

With respect to independent Claims 16, 29, and 30, the thermal bonding step required by both Tamiya and Jennergren — especially over a large area of the filament — would destroy the absorptive capability of the instant invention by obliterating the sufficient

openings that allow the substantial filling with water. Claims 16, 29, and 30 are supported in the specification with the teaching of openings that allow liquid to substantially or entirely displace air (or gas) via the principle of capillary action. *See* paragraphs 0039 to 0048. Thus, in light of the requirement by the cited references to melt filaments together, Applicants respectfully submit that Claims 16-38 are not obviated by references that destroy some or all of the absorptive capability of the instant invention (*i.e.*, a thermal bonding step).

Regarding Claims 16 and 28, both references are silent with respect to an absorption capability range despite a plethora of other measurements. *See* Tables 1, 2, and 3 of the '990 patent and Table 1 of the Tamiya '848 publication. Therefore, Applicants submit that any absorptive capability of the melted filaments disclosed in the references is unknown. Thus, the Examiner's assertion that the cited references inherently disclose the claimed absorption capability is unfounded.

Independent Claims 28 and 37 are written using the "consisting essentially of" language. Applicants respectfully submit that the thermal bonding processes required by Tamiya and Jennergren would necessarily melt at least a portion of the filament or fiber. The melting step will destroy the pores of the invention by melting them closed. This constitutes a material change that would alter the claimed moisture absorption capability.

In this regard, Applicants respectfully point out that the, "consisting essentially of" language concerns whether, "...introduction of additional steps or components would materially change the characteristics of applicant's invention" and does not concern anything that "impairs" the basic and novel characteristic of the filament. *See* MPEP 2111.03. That said, both references further disclose materials that materially affect the basic and novel characteristics of the claimed invention.

For example, the Tamiya '848 reference discloses a conjugate fiber comprising a core part and a sheath part. Although the core part may be formed of polyethylene terephthalate, the '848 publication also discloses that the sheath completely surrounds and is bonded (*i.e.*,

melted) to the core part. *See* page 322, first column. Applying the sheath material to the instant invention will materially affect its basic and novel characteristics. Thus, the combination of the Jennergren ‘990 patent and the Tamiya ‘848 publication fails as applied to the instant invention.

Applicant asserts that there is no suggestion or motivation to combine the conjugate fibers of the cited references in the manner described by the Office. In addition, the combination would destroy the instant invention.

Conclusion

The Shiozaki ‘307 patent fails as a §102 reference because it fails to disclose a hollow polyester filament or a hollow staple fiber consisting essentially of polyethylene terephthalate and having sufficient openings therein for the filament or fiber to substantially fill with a liquid, such as water. Instead, the Shiozaki ‘307 patent teaches the inclusion of a sulfonate additive that “partially dissolves” the polyester when treated with an alkali solution. The sulfonate addition constitutes a material change that affects the basic and novel characteristics of the claimed invention.

The Hirakawa ‘600A publication fails as a §102/103 reference because it fails to recite a hollow polyester filament or a staple filament that may be substantially filled or filled entirely with liquid. Instead, the Hirakawa ‘600A publication discloses, “empty core fibers” used to obtain a hydrophobic sheet, “...having a nice soft texture as well as high levels of permeability and uniformity.” In addition, the hydrophobic nature of the sheet described in the ‘600A publication teaches away from the claimed invention.

The combination of the Tamiya ‘848 reference with the Jennergren ‘990 patent fails to establish a *prima facie* case of obviousness as applied to the instant invention. Both references fail to teach or suggest functional absorption capacities despite painstaking detail with respect to other measurements. In addition, both references disclose conjugate fibers. The conjugate fibers are formed in such a way as to destroy the absorptive capability of the

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claimed invention. Thus, no motivation exists to combine the references in the manner suggested by the Office and the rejection must be overturned.

Claims Appendix

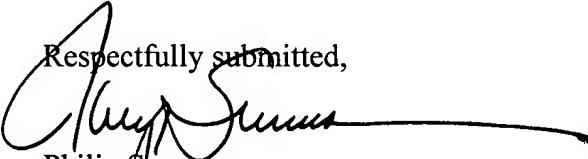
A copy of the claims involved on appeal is provided in the Appendix at Exhibit 1.

Evidence Appendix

There is presently no evidence submitted pursuant to 37 CFR §§1.130, 1.131, or 1.132. Therefore, an Appendix setting forth any evidence is not provided.

Related Proceedings Appendix

There are presently no related proceedings, therefore, an Appendix setting forth any related proceedings is not provided.

Respectfully submitted,

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Exhibit 1

2. (Previously Presented) A hollow polyester filament consisting essentially of polyethylene terephthalate having sufficient openings therein for said hollow filament to substantially fill with a liquid selected from the group consisting of water, water-based solutions, and water-based suspensions.
4. (Previously Presented) A staple fiber cut from the hollow filament of Claim 2.
5. (Original) A staple fiber according to Claim 4 and having a length sufficient to exhibit fiber properties.
6. (Original) A staple fiber according to Claim 4 and having a length sufficient to support a meniscus of water at each end thereof.
7. (Original) A staple fiber according to Claim 4 having a length of between about one-quarter inch and two inches.
8. (Original) A nonwoven fabric formed from a plurality of staple fibers according to Claim 4.
9. (Original) A nonwoven fabric formed from a plurality of staple fibers according to Claim 7.
10. (Original) An absorbent structure that includes a nonwoven fabric according to Claim 9.

11. (Previously Presented) A hollow filament according to Claim 2 wherein both said filament and its hollow portion have respective circular cross section.

12. (Previously Presented) A hollow filament according to Claim 2 wherein said filament has a circular cross section and said hollow portion has a non-circular cross section.

13. (Previously Presented) A hollow filament according to Claim 2 wherein said filament has a non-circular cross section and said hollow portion has a circular cross section.

14. (Previously Presented) A hollow filament according to Claim 2 wherein said filament has a non-circular cross section and said hollow portion has a non-circular cross section.

15. (Original) A hollow staple fiber consisting essentially of polyethylene terephthalate and having sufficient openings therein for said staple fiber to substantially fill with water.

16. (Original) A polyester filament having a moisture absorption capability of between about 10 and 30 percent by volume.

17. (Original) A filament according to Claim 16 consisting essentially of polyethylene terephthalate.

18. (Original) A hollow filament according to Claim 16.

19. (Original) A hollow filament according to Claim 16 wherein both said filament and its hollow portion have respective circular cross section.

20. (Original) A staple fiber cut from the filament of Claim 16.
21. (Original) A nonwoven fabric formed from the staple fiber of Claim 20.
22. (Original) An absorbent structure that includes a nonwoven fabric according to Claim 21.
23. (Original) A hollow filament according to Claim 18 and having an asymmetric cross section.
24. (Original) A hollow filament according to Claim 23 wherein both said filament and its hollow portion have respective circular cross section and said hollow portion is not coaxial with said filament..
25. (Original) A staple fiber cut from the filament of Claim 23.
26. (Original) A nonwoven fabric formed from the staple fiber of Claim 25.
27. (Original) An absorbent structure that includes a nonwoven fabric according to Claim 26.
28. (Original) A staple fiber consisting essentially of polyethylene terephthalate and having a moisture absorption capability of between about 10 and 30 percent by volume.
29. (Original) A hollow filament having an asymmetric cross section and having sufficient openings therein for said hollow filament to substantially fill with liquid.

30. (Original) A hollow polyester filament having an asymmetric cross section and having sufficient openings therein for said hollow filament to substantially fill with a liquid selected from the group consisting of water, water-based solutions, and water-based suspensions.

31. (Original) A filament according to Claim 29 consisting essentially of polyethylene terephthalate.

32. (Original) A filament according to Claim 29 wherein both said filament and its hollow portion have respective circular cross sections and wherein said hollow portion is not coaxial with said filament.

33. (Original) A staple fiber cut from the filament of Claim 29.

34. (Original) A staple fiber according to Claim 33 having a length of between about one-quarter inch and two inches.

35. (Original) A nonwoven fabric formed from a plurality of staple fibers according to Claim 34.

36. (Original) An absorbent structure that includes a nonwoven fabric according to Claim 35.

37. (Original) A hollow staple fiber consisting essentially of polyethylene terephthalate;

said staple fiber having sufficient openings therein for said staple fiber to substantially fill with a liquid; and

said staple fiber and its hollow portion having respective circular cross sections and wherein said hollow portion is not coaxial with said staple fiber.

38. (Original) A hollow staple fiber according to Claim 37 having sufficient openings therein for said staple fiber to substantially fill with a liquid selected from the group consisting of water, water-based solutions, and water-based suspensions.

72. (Original) A staple filament having a coaxial opening entirely therethrough, the filament having a length defined by the minimum length sufficient to support a meniscus of water in the coaxial opening and a maximum length at which the filament will fill entirely with a liquid selected from the group consisting of water and water-based solutions and suspensions.

73. (Original) A staple filament according to Claim 72 wherein the maximum length is the length above which air pressure between a meniscus at each end of the filament will prevent the opening from filling entirely with the selected liquid.

74. (Original) A staple filament according to Claim 72 comprising polyester.

75. (Original) A staple filament according to Claim 72 comprising polyethylene terephthalate.

76. (Original) A staple filament according to Claim 72 having a length less than about one-half inch.

77. (Original) A staple filament according to Claim 72 having a length of about one-quarter inch.

78. (Original) A staple filament according to Claim 72 having a denier of between about 1 and 45.

79. (Original) A staple filament according to Claim 72 having a denier of between about 1 and 10.

80. (Original) A staple filament according to Claim 72 having a denier of between about 1 and 3.